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Annapurna Conservation Area And The Annapurna Conservation Area Project

Introduction to Annapurna Conservation Area

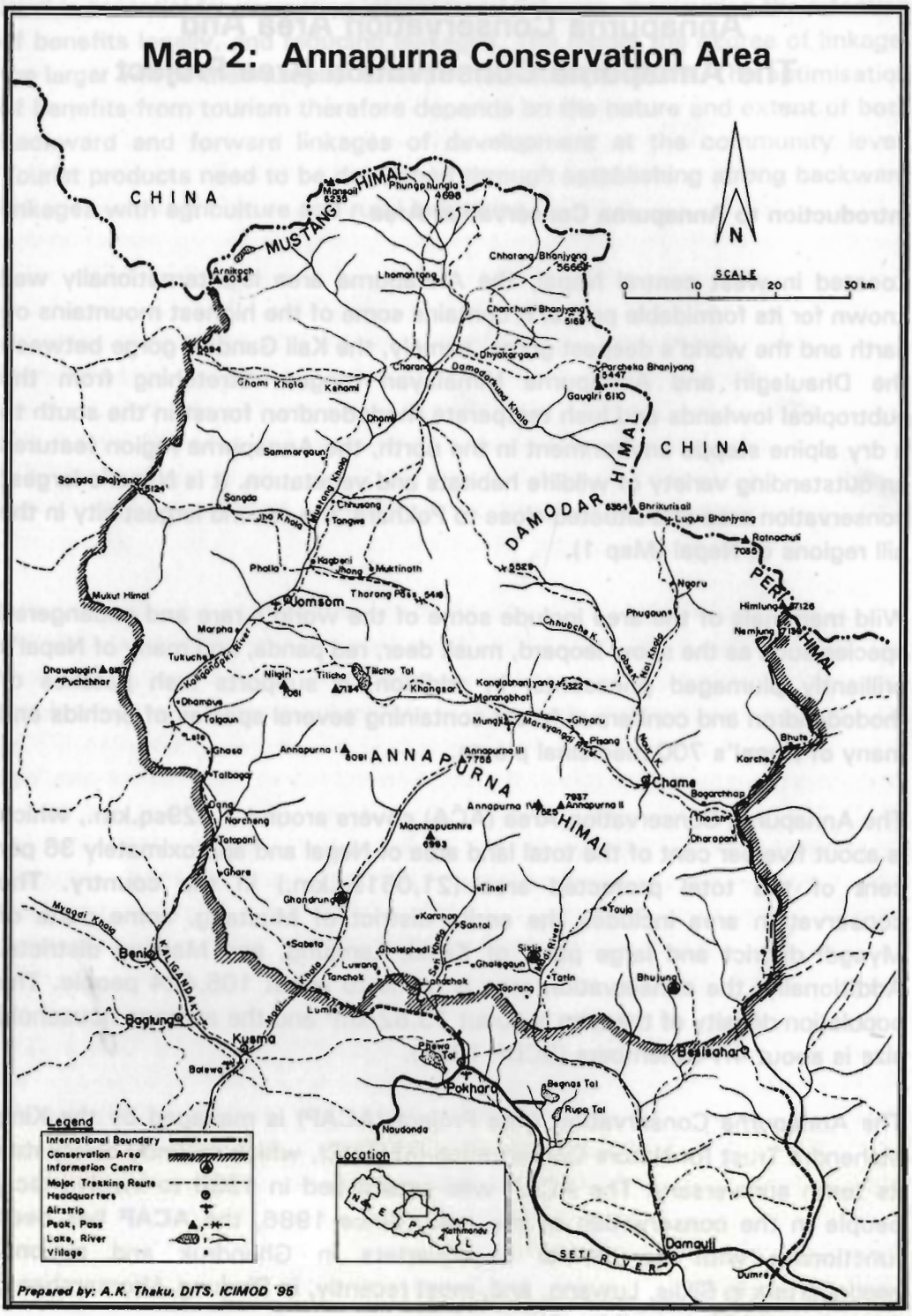
Located in west central Nepal, the Annapurna area is internationally well known for its formidable peaks. It contains some of the highest mountains on earth and the world's deepest gorge, namely, the Kali Gandaki gorge between the Dhaulagiri and Annapurna Himalayan ranges. Stretching from the subtropical lowlands and lush temperate rhododendron forest in the south to a dry alpine steppe environment in the north, the Annapurna region features an outstanding variety of wildlife habitats and vegetation. It is Nepal's largest conservation area and situated close to Pokhara, the second largest city in the hill regions of Nepal (Map 1).

Wild mammals of the area include some of the world's rare and endangered species such as the snow leopard, musk deer, red panda, and many of Nepal's brilliantly plumaged pheasants. In addition, it supports lush patches of rhododendron and coniferous forest containing several species of orchids and many of Nepal's 700 medicinal plants.

The Annapurna Conservation Area (ACA) covers around 7,629sq.km., which is about five per cent of the total land area of Nepal and approximately 36 per cent of the total protected area (21,051sq.km.) in the country. The conservation area includes the entire district of Mustang, some parts of Myagdi district and large parts of Kaski, Lamjung, and Manang districts. Additionally, the conservation area is home to about 105,424 people. The population density of the area is about 13.82/km^2 and the average household size is about 4.74 members (BCDP 1994).

The Annapurna Conservation Area Project (ACAP) is managed by the King Mahendra Trust for Nature Conservation (KMTNC), which recently celebrated its tenth anniversary. The ACAP was established in 1986 to involve local people in the conservation of the area. Since 1986, the ACAP has been functioning with its central headquarters in Ghandruk and regional headquarters in Siklis, Luwang, and, most recently, in Bhujung, Lhomanthang, Jomsom, and Manang (Map 2).

Map 2: Annapurna Conservation Area



Physical Features

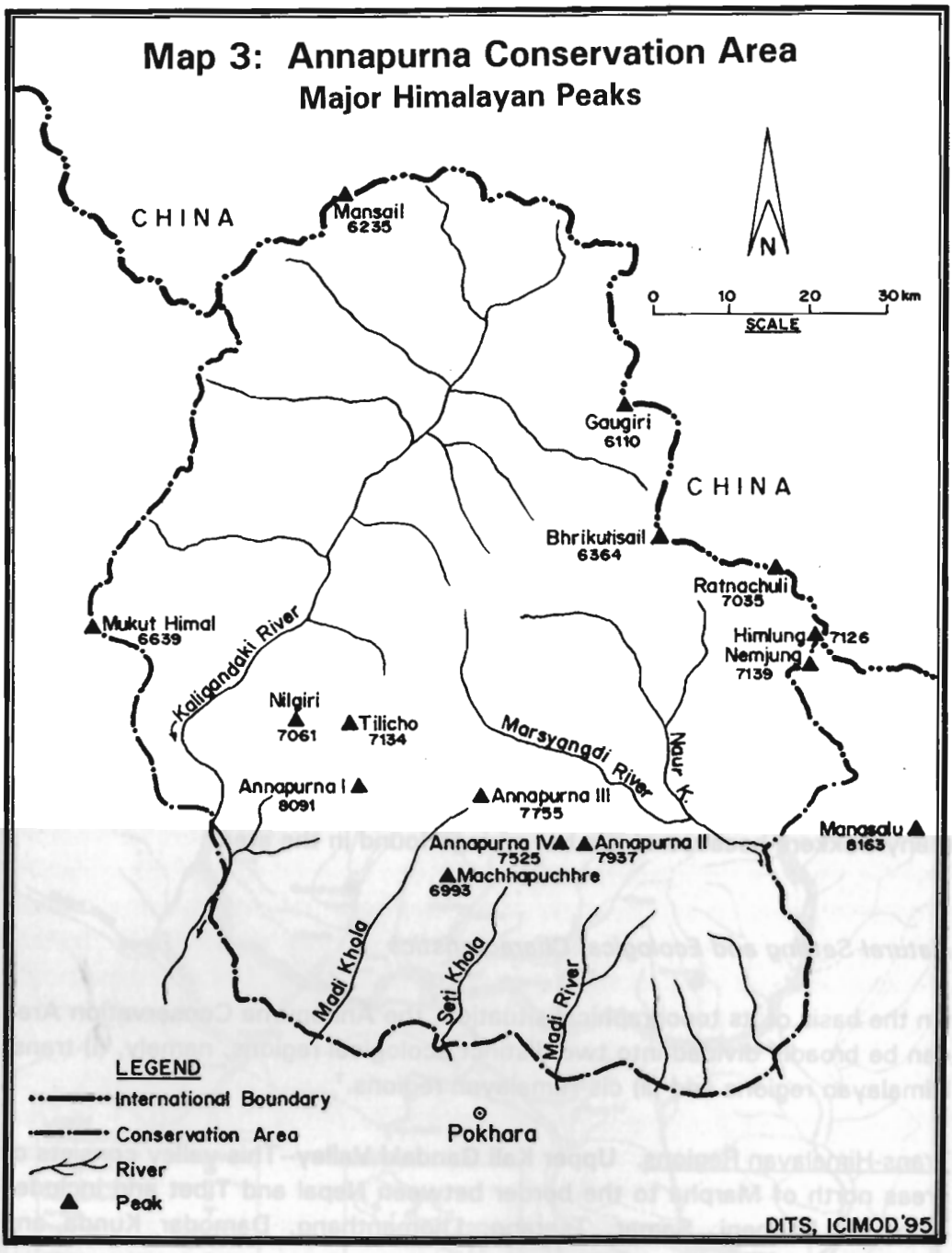
The Annapurna Conservation Area is dominated by mountain ranges and peaks, namely, the family of Annapurna peaks, Nilgiri south, Nilgiri north, Tilicho peak, Himchuli, Machhapuchhre, Gangapurna, Lamjung Himal, and Tukuche peak (Map 3). The grandeur of these peaks is best seen from Pun hill, located in Ghorepani village, and from Ghandruk village, through fir and rhododendron forests. The Annapurna range stretches from north to south, and the Kali Gandaki and Marsayangdi rivers lie on either side. Madi River originates at the Annapurna base camp. These three major river systems drain the Annapurna Conservation Area. The altitudinal range can vary anywhere from 1,000 metres above sea level (masl) to 8,000masl, resulting in a mosaic of different geographical zones, from subtropical conditions in the southern part to an alpine zone in the north. In a stretch of less than 50km, tropical hardwood trees (such as *Shorea robusta, Terminalia tomentosa, Bombax ceiba,* and *Eugenia jambolana*), pine-clad hills and oak forests at medium altitudes, then rhododendrons and firs that give way to birches and junipers before the vegetation changes to alpine scrublands, grasslands, meadows, and, finally, a treeless zone can all be found. Many waterfalls are encountered throughout the Annapurna trekking circuits. Two high-altitude lakes (i.e., Damodar Kunda and Tilicho) are located within the ACA. The sacred pilgrimage spot of Muktinath is located near the base of the Thorang La (pass) which divides the Kali Gandaki and Marshyangdi valleys. Kagbeni is the gateway to the upper Mustang district, which has only recently been opened to limited groups of tourists. The upper Kali Gandaki Valley features numerous fossil amenities (N. *saligram*). Tatopani, in the lower Mustang district area, is a sub-destination for many trekkers because of the hot springs found in the area.

Natural Setting and Ecological Characteristics

On the basis of its topographical situation, the Annapurna Conservation Area can be broadly divided into two distinct ecological regions, namely, (i) trans-Himalayan regions and (ii) cis-Himalayan regions.[1]

Trans-Himalayan Regions. **Upper Kali Gandaki Valley**--This valley consists of areas north of Marpha to the border between Nepal and Tibet and includes Jomsom, Kagbeni, Samar, Tsarang, Lhomanthang, Damodar Kunda, and

[1] The following notes on natural setting and ecological characteristics are elaborated in Bio-Diversity Conservation Data Project, Final Report, 1994.


Map 3: Annapurna Conservation Area
Major Himalayan Peaks
CHINA
Mansail
6235
N
0 10 20 30 km
SCALE
Gaugiri
6110
CHINA
Bhrikutisail
6364
Ratnachuli
7035
Himlung
7126
Nemjung
7139
Mukut Himal
6639
Kaligandaki River
Nilgiri
7061
Tilicho
7134
Marsyangdi River
Naur K.
Annapurna I
8091
Annapurna III
7755
Annapurna IV
7525
Annapurna II
7937
Manasalu
8163
Machhapuchhre
6993
Madi Khola
Seti Khola
Madi River
LEGEND
International Boundary
Conservation Area
River
Peak
Pokhara
DITS, ICIMOD'95

Muktinath. Jomsom is the headquarters of Mustang district and has a dry climate. The area lies north of the main Himalayas.

In this region, *Caragana brevifolia, Lonicera obvata, Rosa* sp, *Artemisia* sp, *Ephedra gerardiana*, and *Juniperus indica* are the dominant plant species generally found between 2,850 to 3,500masl, grassland shrub from 3,500 to 4,900masl, and rocks above 4,900masl.

Upper Marsayangdi Valley--This valley is situated in the northern part of central Nepal and is surrounded by the Himalayas on all four sides, namely, Annapurna in the south; Mukut in the west; Damodar in the north; and Mahalangur in the east. In Manang, the Khangsar and Kone *khola* (rivers) meet to form the Marshyangdi River. The Marshyangdi River proceeds south-east and then turns south through a narrow gorge formed by the Annapurna and Mahalangur ranges. The upper Marshyangdi Valley has a diverse habitat and represents the ecological zones upward from the temperate region. *Picea smithiana, Taxus baccata, Tsuga dumosa, Abies spectabilis, Betula utilis, Juniperus indica, Rhododendron arboreum,*and *R. barbatum* are dominant species from 2,700 to 3,150masl. *Pinus wallichiana, Juniperus indica, Betula utilis, Juniperus squamata, Rhododendron campanulatum*, and *R. lepidotum* are found in the 3,150 to 3,500masl range. Shrub and rocks with *Saussurea gossyphora* and *Cremanthodium purpureifolium* are prominent above 3,500masl.

Cis-Himalayan Region. **Madi Valley**--The Madi River originates from the base of Annapurna VI and Lamjung Himal and cuts a deep valley draining south through different vegetational zones. Subtropical, deciduous hill forests make up the Madi River's alluvial fan. *Alder, Bombax ceiba, Schima wallichii, Castonopsis indica, Toona serrata, Cinnamomum tamala, Alnus nepalensis, Rhododendron arboreum, Lyonia ovalifolia, Cyathea spinulosa, Shorea robusta*, and *Woodfordia fruticosa* are prominent species of plants found in this area.

Bhujung Region--The Bhujung region is located along the eastern bank of the Midim River on the southern slope of Lamjung Himal. The Midim and Khudi rivers are mostly covered by a dense forest in the east to Marshyangdi and west to Kali Gandaki. Dominant species in this region include *Bombax malabericum, Schima wallichii, Castanopsis indica,* and *Maesa chisa (1,100-1,500m); Viburnum erubescens, V. mullaha, Maesa chisia,* and *Quercus lamellosa (1,500-2,100m); Lyonia ovalifolia, Lex diparina, Eurya acuminota, Michelia kisopa,* and *Daphniphyllum himalayensis (2,100-2,700m); Taxus*

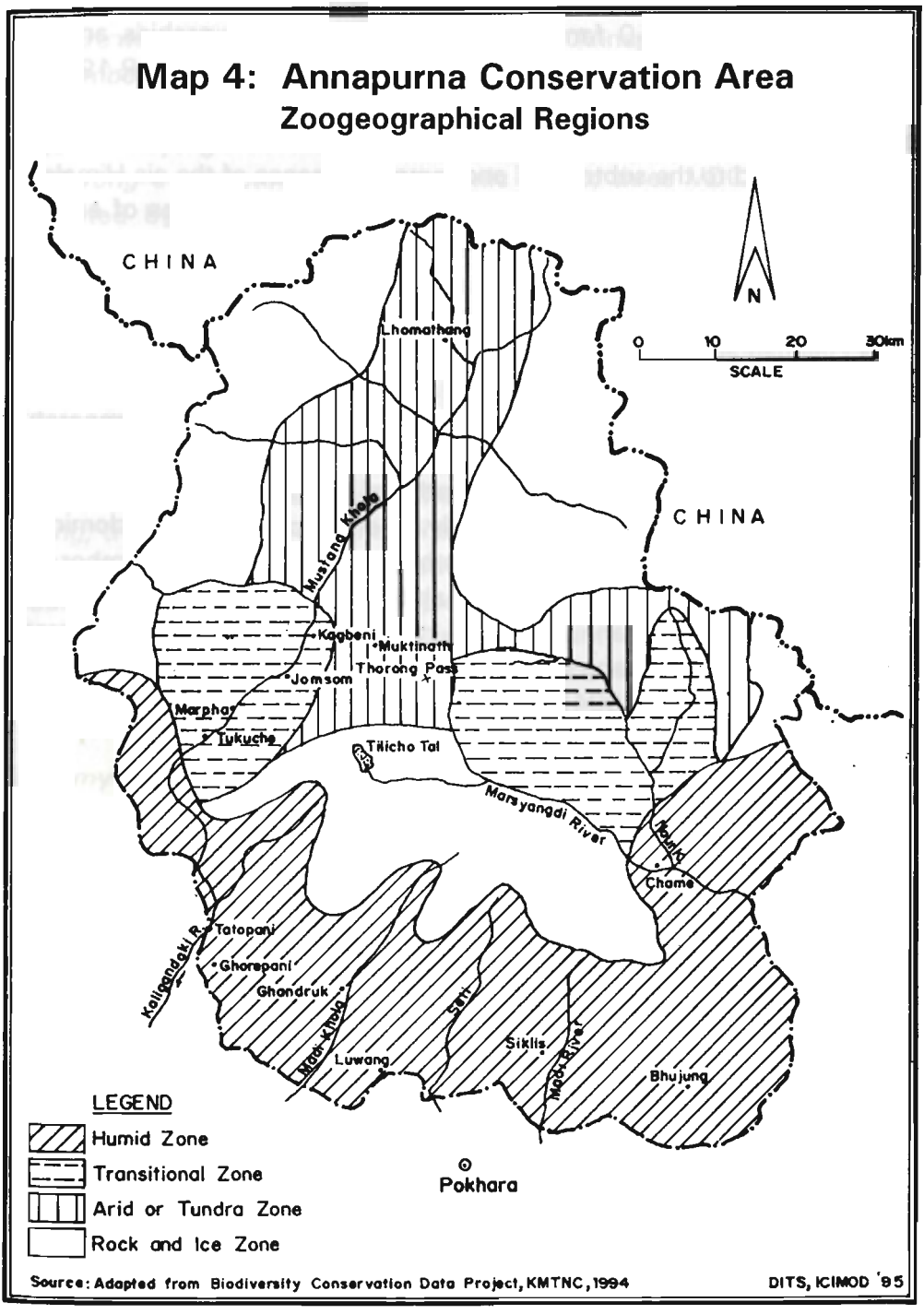
baccata, Rhododendron arboreum, R. barbatum, and *Sorbus cuspidata (2,700-3,100m)*; and *Abies spectabilis, Rhododendron campanulatum, R. barbatum,* and *Betula utilis*. Shrubs dominate the vegetation beyond 3,500masl.

Lower Kali Gandaki Valley--Most of the lower Kali Gandaki Valley lies within the ACA. This region is characterised by subtropical and temperate regions. Dominant species in this valley are: *Shorea robusta, Bombax malabericum, Schima wallichii,* and *Castanopsis indica (850-1,400m)*; *Schima wallichii, Castanopsis indica, Rhus successidiana,* and *Toona ciliata (1,400-2,100m)*; and *Rhododendron arboreum, Pinus wallichiana,* and *Picea smithiana*.

Lower Marsayangdi Valley--The lower Marshyangdi Valley falls within the tropical to temperate regions. This area is much disturbed by human settlement, with trees being lopped for different purposes. The dominant species in this valley are: *Shorea robusta, Bombax malabericum, Schima wallichii, Castanopsis indica*; *Schima wallichii, Castanopsis indica, Rhus successidiana, Toona ciliata*; and *Rhododendron arboreum, Pinus wallichiana, Picea smithiana*.

Areas West of Madi--The subtropical zone west of Madi is heavily disturbed by human settlement and encroachment. South-facing slopes of the temperate zone are dominated by pure rhododendron forests. Species' distribution in this region are: *Schima wallichii, Castanopsis indica, Alnus nepalensis, Rhus wallichiana, Bombax malabericum, Pinus roxburghii,* and *Engelhardtia spicata* (1,100-1,800masl); *Viburnum erubescens, Rhododendron arboreum, Daphniphyllum himalayenis, Maesa chisa,* and *Daphne bolua* (1,800-2,400masl); *Rhododendron arboreum, Quercus lamelossa, Q. semecarpifolia, Mahonia nepaulensis, Michelia kisopa, Acer* sp., and *Sorbus cuspidata* (2,400-3,000masl); *Abies spectabilis, Taxus baccata, Tsuga dumosa, Betula utilis, Rhododendron campanulatum, R. arboreum,* and *R. barbatum* (3,000-3,300masl); *Rhododendron lepidotum, R. campanulatum, Juniperus recurva, Ephedra gerardiana,* and *Potentilla* sp. (3,300-4,000masl); and shrubs above 4,000masl.

The complex natural settings and ecological characteristics are reflected in a wide spectrum of vegetation types which range within the Annapurna Conservation Area (Map 4) from below 1,000masl in elevation to the trans-Himalayan alpine region. The many plant species endemic to Nepal include *Rhododendron campanulatum, R. lowndesii,* and *Picea smithiana*. A total of 1,226 plant species have been recorded in the Annapurna Conservation Area.


Map 4: Annapurna Conservation Area
Zoogeographical Regions
CHINA
CHINA
N
0 10 20 30km
SCALE
Lhomathang
Mustang Khola
Kagbeni
Muktinath
Thorong Pass
Jomsom
Marphar
Lukuche
Tilicho Tal
Marsyangdi River
Jharki
Chame
Tatopani
Ghorepani
Ghandruk
Kaligandaki R.
Modi Khola
Luwang
Sikles
Modi River
Bhujung
Pokhara
LEGEND
Humid Zone
Transitional Zone
Arid or Tundra Zone
Rock and Ice Zone
Source: Adapted from Biodiversity Conservation Data Project, KMTNC, 1994
DITS, ICIMOD '95

This includes 928 species of dicotyledons, 196 species of monocotyledons, 15 species of gymnosperms, 85 species of pteridophytes, and two species of fungi from a total of 150 families. In all, 38 species of orchids and nine species of rhododendrons have been recorded in this region (BCDP 1994).

Furthermore, 22 forest types are known within the Annapurna region. Most of them are confined to the subtropical and temperate zones of the cis-Himalayan region. In total, 426 species of medicinal plants and 54 species of endemic plants have also been recorded.

Climate

The climate varies with altitude and aspect. There is a 6^{0}C drop in temperature for every 1,000m rise in elevation (DUHE 1977). The average daily temperature decreases between the months of December and February and reaches a maximum between May and July. The seasonal climate is dominated by the southerly monsoon, which occurs between June and September. The rainfall type is mainly related to aspect, altitude, and the presence of a rain-shadow effect. Average annual rainfall ranges from 193mm in the trans-Himalayan region of Mustang to 2,987mm at Ghandruk, which is in the cis-Himalayan region (BCDP 1994).

Wildlife

The variation in altitude and topography, along with the existing forest cover, provides a wide range of habitats. Twenty-two species of amphibians from five families, 39 species of reptiles from eight families, 101 species of mammals from 23 families, and 474 species of birds from 52 families have been reported in the Annapurna Conservation Area (BCDP 1994). The brown bear (*Ursus arctos*) was also sighted for the first time in Damodar Kunda. The Himalayan *thar* (*Hemitragus jemlahicus*), barking deer (*Muntiacus muntjak*), *serew* (*Capricornis sumatraensis*), goral (*Nemorhaedus ghoral*), Himalayan bear (*Selenarctos thibetanus*), musk deer (*Moschus chrysogaster*), blue sheep (*Pseudois nayaur*), red panda (*Ailurus fulgens*), and snow leopard (*Panthera uncia*) are among the rare species found within the Annapurna region. Among these animals, the musk deer, the red panda, and the snow leopard are on the world list of endangered species. The Annapurna region also provides excellent habitats for various types of spring and autumn birds migrating from India and China, as well as from other regions.

Human Settlement and Culture

There are many villages to be found within the Annapurna Conservation Area. The number of village development committees (VDCs) and total population distribution is summarised in Table 3.1. Seventeen VDCs of Kaski and eight VDCs of Lamjung district are within the Annapurna Conservation Area, with the *Gurung* constituting the main ethnic group; three VDCs of Myagdi are dominated by the *Magar*; 18 VDCs of Manang by the *Managi Gurung*; Muktinath Valley by the *Mustangi* and *Baragaun Bhotia*, and the *Thakali* occupy the whole 18 VDCs of the Mustang region except at lower elevations. In the peripheral parts of the villages, *Brahmin, Kshetri, Kami, Newar* and other ethic groups are also to be found. The settlement pattern is usually clumped in most *Gurung* villages, whereas a scattered pattern occurs in villages dominated by other ethnic groups. Therefore, the region is culturally heterogeneous, and this is one of the main attractions to tourists who visit this region. The people who inhabit the high mountain regions are mostly the *Gurung,* the *Bhotia,* and the *Thakali* ethnic groups. Other people living in lower cis-Himalayan regions are mixed ethnic groups and include both Hindus and Buddhists. The Muktinath temple (Muktikshetra), located within the conservation area, is religiously an important place for both religions. Thousands of people come to the Muktikshetra each year to worship Lord Shiva.

Economy

The people in the Annapurna region, as in other rural areas of Nepal, depend on traditional agricultural practices and farming for their livelihood. Tourism also provides income for a large number of people in this region.

In cis-Himalayan regions, two crops are generally harvested annually, but they are believed to be inadequate to meet the food needs of the population. A large number of people, from the *Gurung* and *Magar* ethnic groups especially have traditionally been migrating to join the British and Indian armies. Thus, remittances and pensions are major income sources for many households in the region. But a large majority continue to rely on agriculture and animal husbandry to fulfil their basic needs.

Buffalo and cattle rearing occur all over the Annapurna region for milk and ghee producton, drafting, and other purposes. Yaks are found above 2,000masl. Sheep and goats usually graze in meadows not accessible to yaks and in areas where there is not enough fodder for larger livestock.

Other socioeconomic activities in the region include portering, operating teashops and lodges, bartering, producing and selling handicrafts, and collecting medicinal plants. The dependence of the local people on natural resources, or HER, is therefore to be seen in many activities. A recent study characterises these aspects of the population and natural resources of the area (BCDP 1994):

- the southern slopes (termed the cis-Himalayan zone) feels the high impact of human encroachment due to an exploding population and tourism, and the trans-Himalayan valley, with a very low population density is feeling a similar impact from tourism alone; and
- population density is rather high on the southern slopes in comparison to the trans-Himalayan zone.

Tourism in the Annapurna Region

The ACAP area is by far the most popular mountain tourism destination in the Nepal Himalayas. Trends in tourist visits to the Annapurna area are shown in Table 3.2.

Review of the Annapurna Conservation Area Project

Introduction

This section reviews some aspects of the Annapurna Conservation Area Project (ACAP), based on literature that was made available to CREST by the King Mahendra Trust for Nature Conservation. The Annapurna area encompasses 2,600sq.km. of high Himalayan terrain in which reside more than 40,000 people in five administrative districts. Though many ethnic groups with diverse cultural backgrounds are found in the area, providing a true mosaic, *Gurung, Magar* and *Thakali* are the dominant ethnic groups. The southern slopes are dominated by the *Gurung* and *Magar*, the northern and eastern areas by the *Manangi*, and the western Kali Gandaki Valley by the *Thakali,* the *Manangi* and Tibetans (Gurung 1990). Traditionally, *Gurung* and *Magar* serve in the British and Indian armies, whereas *Thakali* have been traders, carrying on business across the borders into Tibet and India. The majority of the inhabitants are poor farmers who are heavily dependent on land and nature for their livelihood.

Because of the area's unique and diverse ecological and cultural features, as well as accessibility, the Annapurna region has been by far the most popular

mountain tourist destination in Nepal. From a total of eight in 1966, the Annapurna region alone is now host to over 45,000 visitors each year and exceeds all visitors combined to other mountain areas. Despite positive benefits that tourism has brought to this region, deforestation, habitat destruction, litter, garbage, and other negative effects have also occurred, posing serious threats to the overall natural environment of the area.

In response to this impending ecological crisis, the King Mahendra Trust for Nature Conservation (KMTNC) was created by royal directives to implement meaningful conservation measures in order to strike a realistic balance between tourism, economic development, and nature conservation in the Annapurna region. KMTNC, founded in 1982 as a non-governmental and non-profit organisation, undertook a feasibility study of the area in June 1985. This study resulted in an Annapurna Conservation Area operational plan, and thence the Annapurna Conservation Area Project (ACAP). This plan advocated a new concept in protected area management by stimulating both improved local land-use practice, community development, and environmental protection rather than establishing a national park.The ACAP plan was officially approved in July 1986 and, in December 1986, the project started its activities by establishing a headquarters in Ghandruk village. On July 20, 1992, the ACAP received official gazetting from His Majesty's Government.

Objectives, Philosophy, and Approach

This section provides a brief introduction to the ACAP. It should be made clear that the discussion in it is not meant as an evaluation of the ACAP project. The aim is to evaluate "mountain tourism for local community development," and only those programmes and activities of the ACAP that are directly related to these issues are discussed. The present study being a case study, its scope is limited to the areas selected (Ghandruk, Ghorepani, and Ulleri) and does not in any way cover the vast area touched by ACAP.

The ACAP aims to develop an innovative approach for preventing environmental degradation and loss of natural resources in the Annapurna area through the creation of a sustainable balance of needs among local people, tourism management, and nature conservation, i.e., mountain development.[2] ACAP has both long and short-term objectives.

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[2] Mountain development is used to signify HER, MCD and MTD within the context of the carrying capacity of mountain environment.

Long-term objectives

- To conserve natural and cultural resources for all generations.
- To bring sustainable social and economic development.
- To develop tourism with minimum negative environmental impact.

Short-term objectives

- To improve forest conditions through improved management, rehabilitation, and agro-forestry programmes.
- To increase local people's awareness on environment, health and sanitation.
- To increase public participation in resource conservation and local development.
- To introduce appropriate fuel-saving technology.
- To monitor tourist numbers and activities and provide basic tourist facilities.

An important element of the ACAP's philosophy is to involve local people in all aspects of conservation and the development process, including tourism. The project is based on a grass-roots' philosophy. ACAP helps villagers to improve their quality of life and to strengthen their cultural integrity by empowering them with appropriate skills, knowledge, and technical and financial assistance. The formation of conservation and development committees (CDCs) at grass-roots' level is the mainstay of ACAP's Community Empowerment Approach.

Although the entire population of the area forms ACAP's target group, special attention is given to women and to people of lower caste. Tourists are also one of the target groups of ACAP programmes. Each village within the ACAP area must agree to form such a committee before it begins work in the area. Once the conservation committee is established and basic sanitation standards met, ACAP participates in the village as a matchmaker to link community-identified projects with external funding and technical expertise. Depending on the village resources, ACAP usually provides 50 per cent of the total project cost, with the remaining amount to be contributed by the villagers themselves. This is the form of partnership approach between ACAP and the local community practised in the area.

ACAP's partnership approach for involving local participation in conservation is an indirect approach, since conservation can occur only after some benefits

are assured to the people. However, to make conservation sustainable even after ACAP withdraws its support, incentives in the form of conservation education and development programmes that reduce village dependence on natural resources are initiated.

ACAP has developed management strategies that gives priority to heavily impacted areas in order to achieve its long-term conservation goals. Because of the large size of the project area, the whole conservation area has been divided into five management zones. These management zones include the following.

- Special Management Zone
- Intensive Use Zone
- Protected Forest/Seasonal Grazing Zone
- Wilderness Zone
- Biological/Anthropological Zone

ACAP began its programme by focussing on three keys areas, namely, community development, tourism development, and conservation; the latter being an element of HER, MCD, and MTD. An important part of the community development has been the formation of grass-roots' institutions. Such institutions have been formed to protect the natural resources (forest management committees) and promote both community and tourism development. ACAP's strategies fit in quite well with the framework developed in Chapter 2.

Since ACAP has been given legal authority over development of the region, it has assumed the responsibility for coordinating all development activities carried out by different ministries and departments and NGOs and INGOs in the region. ACAP's activites are sustained by tourist income (conservation fee), with additional support from the World Wildlife Fund, different King Mahendra Trusts in other countries, the German Alpine Club, and other international organisations.

ACAP's programme implementation can be divided into three phases (Dan Sieman 1993): a three-year pre-phased period (1987-1989) centred around Ghandruk village and Annapurna sanctuary (special management zone); a second phase started in 1990 and covering the entire management zone and portion of the intensive use zone; and the upcoming third phase, during which all remaining parts of the conservation area will be covered.

Programmes

Conservation. ACAP aims to counter forest degradation and deforestation by:

- increasing the area under forest cover;
- maintain the quality of existing forests;
- stabilise landslide areas; and
- develop community forestry.

The following strategies have been adopted to pursue the objectives of:

- promoting conservation education among villagers;
- returning the control of forest management to the local people;
- planting trees and establishing nurseries to increase forest area; and
- promoting fuelwood-efficient technologies and alternative sources of energy to reduce firewood consumption.

Conservation Education--The goal of the conservation education programme is to improve villagers' willingness to implement conservation policies by raising environmental awareness. First, villagers are made aware of the importance of forests and the causes and consequences of forest degradation; second, villagers are instructed on how they can participate in conservation through resource management and adopting new technology.

The conservation education programme is especially targetted at school children, adults in the community and trekker tourists, lodges and staff, medicinal plant collectors, hunters, poachers, and so on. Awareness is generated through museum displays, brochures, posters, booklets, teacher and staff training, and informal methods such as discussions, home visits, village meetings, study tours, and classroom activities. A conservation education curriculum has been developed for teaching at the high school in Ghandruk, and plans are underway to implement it in other schools.[3]

Forest Resource Management--ACAP is reviving the traditional forest management system through the establishment of forest management committees, using local leaders and the community.[4] These committees,

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[3] The conservation education curriculum was introduced to grades 6-8 at the Meshram Baraha High School in Ghandruk in 1990 with the objective of testing and integrating it within a year. Since 1991, ACAP has had a full-time conservation education teacher at this school to carry out this task.

[4] It is argued that the traditional forest management practices collapsed after the nationalisation of forests in 1957.

currently known as Conservation and Development Committees (CDCs), are given sole responsibility for management of forest areas where traditional use rights are established. It is the local people who select and elect the CDC, and it is the committee which formulates its own rules and regulations. The committee is not only responsible for forest-related matters but also for overall resource management. The CDC meets once every month to discuss and decide on forestry and community development issues. Some of the major decisions made by CDCs in most VDCs are related to zonation, firewood use regulations and plantation policies.

Zonation:

- Protected zone (within 2 hours' distance from the main settlement) where tree fodder is allowed but not tree felling.
- Semi-protected zone (2-4 hours' distance from the settlement) where only dry wood can be collected.
- Use zone (over 4 hours' distance from the settlement) where green tree felling for timber may be permitted based on CDC approval.

Regulations for Fuelwood Use:

- Green trees are not to be sold or purchased.
- One permit is issued to a family for a maximum of two prescribed species of tree per season.
- No fodder species shall be cut.
- Prohibition on the collection of medicinal plants and wildlife hunting.
- No electric rod shall be used for fishing.

Plantation Policies:

- The sub-CDC in each ward is responsible for setting aside community plantation sites and protecting them.
- Conservation guards assist the CDC in enforcing the rules. Initially ACAP provided a 100 per cent subsidy to cover the guard's salary in Ghandruk. However, since 1990, the Ghandruk CDC has been providing 10 per cent of the guard's salary, which was subsequently increased by an additional 10 per cent in 1991. ACAP hopes to phase out this subsidy gradually in 10 years.

The main functions and responsibilities of CDCs are as follow:

- make forest rules and make people aware of them;
- employ forest guards;
- select community plantation sites and mobilise the community to tend them;
- collect fees for certain forest products such as timber;
- punish or fine violators;
- utilise funds generated from fees and fines in conservation and local development projects; and
- oversee the conservation and development work funded by the committees and ACAP.

Conservation of Wildlife--ACAP has initiated a total ban on hunting throughout the area. This ban was agreed to by village CDCs and is enforced by forest guards. Fines for illegal hunting range from NRs 5,000 - 10,000. Studies indicate that although people do not hunt in areas where ACAP is active, some illegal hunting still prevails in adjacent areas where there is less control (Siemann et al. 1993). The effectiveness of the hunting ban has been reflected in increased wildlife around villages, and this has in turn led to livestock depravation. A compensation mechanism has yet to evolve, and, to a certain degree, illegal hunting may be related to the lack of compensation. Crop raids by wildlife are also on the rise.

Enforcement--The enforcement mechanism for forest and wildlife conservation is community-based, with the forest guards being hired by the CDCs. For example, in Chhomrong 50 per cent of the guard's salary is paid by ACAP, and the remainder is covered by taxes paid by lodges. ACAP plans to reduce its subsidy by 10 per cent each year. Hiring conservation guards in each VDC would require large financial resources. Given the large number of VDCs under ACAP, it is essential to identify the need for such guards for each village. There is good reason to believe that not all VDCs require forest guards. Second, new ways and means need to be explored and developed to support guard payment.

Apart from forest guards, verbal reprimands, fines, community sanction, and ostracisation by the community are other enforcement mechanisms apart from forest guards. The effectiveness of all these enforcement mechanisms, however, depends very much on how ACAP could make the extra effort to incorporate poorer sections of the area into community decision-making in conservation and development affairs. This is because the majority of the poor

are found to be unaware of ACAP's community development or conservation education activities, and they sometime act contrary to forest regulations in order to meet their survival needs with forest products. Second, the existing enforcement mechanism for those who reside outside the village boundaries does not seem to be too effective, as these people do not participate in village decision-making. It is, however, not clear how violators from outside the area are treated.

Nurseries and Plantations--ACAP has established a number of nurseries at different locations (Ghandruk, Chhomrong, Pasramro, Kuldighan, and Ghorepani) and has encouraged people's participation in tree plantations both on communal and private lands. By 1991, there were four project-owned nurseries established in Ghandruk alone, and, following a nursery training course, four private nurseries for fodder and fuelwood were subsequently developed.

ACAP provides seedlings to the villagers free of charge, but requires that they carry out planting on both communal and private lands. Incentives, such as the provision of barbed wire, technical supervision, and planting layout, are provided by ACAP. These incentives are awarded only after the communities have set aside plantation sites by community consensus, prepared such sites through voluntary labour, and defined good strategies for protection of the plantation sites. Estimates indicate that the survival rate of saplings, varying between communal (70%) and private (81%) plantations, is higher than the average survival rate in Nepal (40-50%). Women have shown a great deal of enthusiasm in the plantation programmes after the formation of the women's development programme.

Fuel-Efficient Technology and Alternative Energy--In an attempt to reduce dependence on fuelwood for cooking and heating, ACAP has introduced a number of innovative fuel-efficient technologies and alternative energy sources in some areas. Before widespread dissemination, ACAP tests each technology, which it then installs as a demonstration model. If successful, widespread distribution takes place according to demand by villagers. Some of the fuel-efficient technologies and alternative energy programmes introduced by ACAP are highlighted below.

Kerosene Depot--The ACAP operational plan suggests that group trekkers should be required to carry kerosene sufficient for cooking throughout the duration of their trek in special management zones (Chhomrong, Ghorepani, Upper Manang, and above Marpha). The plan further states that individuals

should be given concessions to sell kerosene in Kuldighan and Chhomrong. In 1987, a kerosene depot was established at Chhomrong, the last permanent village before the sanctuary, with funds donated by the German Alpine Club. The Chhomrong Lodge Management Committee has enforced the kerosene-only policy above Chhomrong. ACAP has also established checkpoints to ensure that campers obey the rules. Lodges in the sanctuary (i.e., from Chhomrong to Annapurna base camp) also must use kerosene. At the time the kerosene depot was established, daily firewood consumption was 20 kg in traditional households, 250 kg in most tourist lodges, and 100 kg per trekking group. It was estimated that after the introduction of the kerosene depot, about 4,000 kg of firewood a day could be saved during the trekking season. Kerosene use is getting popular, but it is not likely to be a substitute for firewood in more interior and inaccessible areas.

Electricity--The installation of a 50kW electricity plant in Ghandruk at a cost of Rs 3,330,000, of which the local villagers provided 46 per cent in cash and labour, and the remaining 54 per cent was from the Canadian International Aid Agencies (CIDA), HMG/N, and ACAP has become a success. This has benefitted 261 households in Ghandruk. This project is managed by an electricity management committee, consisting of locals and one representative from ACAP. A flat tariff rate is imposed with lodges paying 50 per cent more than households. The problem facing this project is that the installed capacity is already fully used, and demand is growing. ACAP must either install another plant or must devise a new mechanism for distribution. Similarly, another 100kW micro hydro electricity plant project is currently underway in Siklis. It is perhaps one of the largest and most expensive community-owned projects in Nepal, costing Rs 8,000,000. Like the one in Ghandruk, this project was funded half from external aid and half from a loan from ADB/N, ACAP, local equity raised by villagers, and voluntary labour. This project is expected to benefit over 400 households. A Siklis Electrification Service Committee has already been formed which will be responsible for the management.

A recently conducted study indicates that 15 houses and 14 lodges are currently using *bijuli dekchi* for cooking. The *bijuli dekchi* is a low-wattage cooker vessel. Among households using this new technology, estimates indicate that firewood consumption has decreased by almost half from 21 kg per day to about 10.5 kg per day. Although such *dekchi* save fuelwood and are relatively easy to use, they cannot be used for all cooking purposes and take about two hours to boil water. Also, among some communities this device is said to be inappropriate (Annabelle L. Newbigging 1993).

In Ghandruk, ACAP subsidised 30 per cent of the cost of all *bijuli dekchi* under 20 litres by 30 per cent and has also paid for transportation and repair costs for the first year. In Siklis, ACAP has planned to subsidise 60 per cent of such cookers, given the relatively poorer economic conditions of households in this area (Annabelle L. Newbigging 1993). Despite the subsidy, the cost for purchasing and operating a *bijuli dekchi* is still significant.

Back Boiler--The back boiler is perhaps the most successful fuel-saving technology introduced so far by the project. Back boilers simultaneously heat large quantities of water, and cooking can also take place. The heated water is used for a variety of purposes, including the provision of hot showers to tourists, and this source is limited to lodges only. In lodges, this technology is estimated to save on an average 675 kg of wood per month per lodge during tourist seasons - a reduction of 23 per cent of fuelwood use (Siemann et al. 1993)[5]. ACAP has established a back boiler construction workshop in Ghandruk to ensure the control of both cost and quality. The cost of installation of a 100-200-litre drum ranges from Rs 600 to 800. Since the back boiler water heater is integrated with a smokeless improved stove, the demand for smokeless chimneys is growing along with the demand for back boilers. ACAP subsidises the transportation and 50 per cent of the cost of circulatory parts for the back boiler.

Solar Water Heater--The solar water heater is another type of alternative energy technology promoted by ACAP in order to reduce firewood use. The installation cost (Rs 30,000) of this technology is very expensive. Given this problem, a prototype model of a low-cost solar water heater (200 litre capacity) was designed and installed in lodges in Ghandruk and Chhomrong. ACAP subsidises this technology by providing free transportation and installation as incentives for promoting the demand for this technology. The Rs 20 charge to tourists for the hot shower helps cost recovery in two to three years' time. A wider use of this technology is, however, constrained by its price.

Improved Stove--An improved stove is a closed stove that captures a great deal of heat and has a chimney and has not been widely disseminated because its fuelwood saving capacity is debatable. Several families who have installed back boiler water heaters have used such stoves. During the period 1990-91, altogether 19 improved stoves (9 in Ghandruk, 10 in Luwang, and 2 in Siklis)

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[5] An ACAP progress report indicates that this technology has been able to reduce fuelwood consumption on an average of about 40 per cent (ACAP two years' progress report (Jan 1990-Dec 1991)).

were installed. New stoves are being tried out, and one latest design has been found to increase energy efficiency by 60 per cent (Siemann et al. 1993). Available information further suggests that users (both households and lodges) are satisfied with the new stove. Although these stoves appear to be successful in terms of firewood savings, wider dissemination is constrained by its cost, which many poorer households cannot afford. The ACAP programme in future should target these poor households for the installation of this technology.

Space Heater--Space heaters are also designed to reduce the amount of firewood being consumed for heating purposes. During the period 1990-1991, six space heaters with a secondary combustion chamber were installed in Tatopani, Ghandruk, Ghorepani, and Banthanti.

Community Development. Community development aims to improve the living conditions of households. The programmes in this area can be broadly divided into two categories: infrastructural development and social or organisational development for local capacity building. Drinking water, toilet construction, trash disposal, and trail and bridge construction and maintenance are the typical infrastructural projects carried out in the area. Social programmes include community health and sanitation, conservation education, women-related programmes, cultural awareness, and job and skill training.

Community development programmes are initiated and implemented by grass-roots' committees. This approach is intended to ensure that the local population take responsibility for selecting, implementing, and managing community development activities. By helping the community to build their organisational capability, ACAP intends to reduce village dependence on external support. ACAP's focus on grass-roots' development is therefore vital for ensuring the long-term sustainability of the project after its planned withdrawal from the area.

Community Health--Community health programmes are concentrated in Ghandruk where a community health centre was established in 1987 to provide services for about 700 inhabitants. Also visited by tourists, this clinic is becoming more and more popular among the local people. Funding for this clinic was provided by ACAP and local people themselves on a 2:1 ratio.

The focus of the CHC is on preventative health care, namely on vaccination of all preventable diseases and mother and child health care. The centre also provides routine and emergency medical care. Since 1990, there has been an

almost regular monthly, mother and child health care mobile clinic within the Ghandruk sectors.[6] In the Luwang sector, covering six VDCs (Luwang-Ghalel, Revan, Dhampus, Sardi Khola, Ghachok, and Macchapuchhre), arrangements have been made to provide similar health services and to regularise clinic services. In Siklis, where a government-established health post exists, a mother and child health care programme has been regularised. Health care extension programmes to promote health awareness and health education are also ongoing. Women health volunteers, after receiving training, are employed in each ward. Family planning is another preventative health care service. The CHC also provides family planning advice and services. However, the number of families that practise family planning is still very low. More emphasis is being paid to birth control through vasectomy.

Sanitation--ACAP policy requires villagers to construct pit latrines before undertaking their community development programmes. Women's groups, health volunteers, and extension staff have played a key role in motivating local residents to build private toilets. The result has been very encouraging, with 885 toilets in Ghandruk VDC, 118 toilets in Panche VDC, and over 210 in Luwang and Revan VDCs. ACAP has been adopting a trade-off deal approach under which ACAP provides assistance for community development projects only if each household builds private toilets. While toilet facilities in the phase I area are found to be well designed and located, information and education about the case of toilets need to be further improved (Siemann and Steinbach 1993). Management of toilet paper by tourists also needs to be improved. A clean-up campaign is another component of sanitation. The objectives of the campaign are fivefold:

- collection and disposal of litter along the trekking route;
- inspection of latrine and rubbish pits at lodges along the way;
- raising health awareness among both trekkers and lodge owners;
- teaching students about conservation and development;
- suggesting appropriate locations for rubbish pits and latrines.

Construction of rubbish pits and regular clean-up campaigns have reduced the amount of litter on trails and in villages, especially in the phase I area (Ghandruk, Chhomrong, and Ghorepani). Information available from studies indicates that many villagers continue to throw trash on trails or simply in front of their home, and many residents do not bury their rubbish. This implies that educational programmes need to be made more effective in this area.

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[6] VDCs like Ghandruk, Dansheng-Mohorea, Sikha Ghar, and Lumle fall under the Ghandruk sectors.

Infrastructure--Infrastructural programmes implemented under the ACAP are designed to address basic village needs first, and these include improvement in drinking water, trails, and bridges. ACAP has so far supported 10 drinking water projects. The biggest undertaking has been the Khilang project at Siklis, where 1,200 people have benefitted. In most cases, the project provides financial and technical assistance for the purchase of pipes, cement, and taps, with the community contributing physical labour for the transport of required material and for actual construction work. Khilang PW project is considered to be an example of people's participation. This project was completed at a cost of 140,000, of which ACAP provided 40,000, the remaining cost being borne by a local mothers' group, which generated the fund by performing a cultural show in honour of visiting guests, soldiers; and also by CID Trans-himalayan Aid Society.

Bridges--Three bridges have been completed so far near Ghandruk, the first over the Modkyu Khola(1987), the second over the Kumring Khola (1989), and the third over the Ghatte River. The local contribution in terms of cost sharing in these projects was 35, 16, and 51 per cent respectively.[7] The Mandi bridge joining was also improved in 1991.

Trails--The quality of trails and bridges along the main trekking and commercial route within the ACAP active area is a source of pride for local residents. Bad trails are repaired and improved with the support of local people. Thus safe trails have been constructed in almost all parts of Ghandruk village. The participation of Lodge Management Committees (LMC) in development activities has been found to be commendable.

Women's Development Programme--ACAP has also placed special emphasis on increasing women's participation in its conservation and development programmes in view of the important role they play in conservation activities and the need for improving their socioeconomic status. A new programme called Women in Conservation and Development was introduced in 1990. This programme has helped build up women's institutional base through the formation of several women's groups. For example, 19 women's groups were formed in Ghandruk alone, 13 in Luwang, and seven in Siklis during the 1990-91 period. These women's groups are actively involved in various conservation and development activities. ACAP has used its right to select four members of a CDC to ensure that at least one woman representative is chosen if one is not elected by the community.

[7] The Chiuri Khola suspension bridge undertaken by Ghandruk is one of the largest community development projects, and it has benefitted 25,000 people annually, including trekkers.

ACAP's women's development programmes cover the following

- Lodge management skills
- Women's and children's health and nutrition
- **Literacy**
- Carpet-weaving as a vocational skill

Some of the major activities of these women's groups are summarised here. Women's groups (or Ama Committee) in Ghandruk are actively involved in repairing trails. Women's groups in Ghandruk, Luwang, and Siklis meet once a month for a community clean-up and set deadlines for toilet construction in their community -- having fined up to Rs 100 those who have not met such deadlines. Women from groups in Chhomrong and Siklis have banned gambling in their village. Small-scale training programmes, such as wool-knitting and rabbit breeding, are also conducted to develop self-motivation and efficiency for women. A soft loan was also floated by ACAP's women's development section to open up an Ama Carpet Shop in Ghandruk in order to buy and sell handicrafts made of local materials. The market for these goods appears to be promising. Savings' boxes are distributed to local women in order to encourage personal savings. Women's groups in Ghandruk have purchased and distributed utensils for communal use at weddings, post-funeral ceremonies, and other community gatherings. ACAP's women's development section has purchased and distributed 36 pressure cookers for cooking to save both time and fuelwood. Women's groups have been providing funds for this purpose. Study tours are organised for women to increase their knowledge and exposure to different women's development projects of HMG/N and NGOs.

However, the effectiveness of the different women's groups varies among villages depending on the presence of a strong female leader. Although women now have become members of CDCs, their level of participation during meetings has remained low, perhaps because of their low self-confidence (Siemann 1993). Nevertheless, ACAP's women's development programmes are excellent starts for improving the situation of women.

Finally, women's groups (mothers' committees) have played an important role in the conservation of culture. These mothers' committees, which have been established in most project villages, have been encouraging pride in local culture and raising money for community development projects by performing cultural shows and dances at village festivals in honour of tourists. Although mothers' committees and the annual dance and dress competition contribute

to cultural preservation, there so far exists no specific plan of action to achieve the ACAP's cultural conservation objectives.

Adult Education--Two six-month-long women's adult education classes were initiated in Ghandruk with a total of 28 students. ACAP provided 50 per cent of the teacher's salary, in addition to stationery and kerosene. To minimise the drop-out rate, which was over 75 per cent, the women's development section forced the participants to deposit an amount to be refundable only after completion of the programme. Another four, six-month-long adult education classes were organised in 1990 with the initiation of conservation education and extension units. Altogether 82 (38 from Luwang and 43 from Siklis) completed this programme. Similarly, a total of 248 (147 from Ghandruk, 41 from Luwang and 60 from Siklis) completed adult literacy classes.

Tourism Management. A massive influx of tourists into the Annapurna region has had both positive and negative effects. To mitigate problems induced by tourism, as well as to promote benefits, ACAP has implemented a number of programmes aimed at both lodges and tourists.

ACAP collects an entry fee of Rs 600 (approximately US$ 12) from all trekkers visiting the Annapurna Conservation Area. Currently all the revenue from entry fees is deposited in a bank account as an endowment-trust fund to support administration and operation costs. ACAP expects to receive sufficient interest from the trust fund to become financially independent within the next five years, and thus financial independence may improve the long-term sustainability of ACAP. Many visitor's to ACAP's visitor centre in Ghandruk advocate increasing the fee to provide more money for programme activities. Entrance fee collection allows ACAP to monitor the number of tourists each month. Although tourists tend to spend only five-15 days in the area, their presence creates seasonal population pressure which requires monitoring and management. This pressure is further compounded by the limited areas visitors are permitted to visit. Also, from a product diversification point of view, aside from trekking there have been no new products developed: and this is necessary to benefit a wider population as well as reduce pressure in existing areas.

Lodge Management--ACAP has attempted to counteract a number of problems associated with tourist lodges that existed prior to the operation of ACAP. Before ACAP, tourist lodges were of poor quality. Lodge owners used to make no profit from room rent and only marginal profit from food, mostly imported from Pokhara. The leakage was considerably high. Only seven per cent of

every dollar spent by tourists remained in the village (ACAP estimates in 1985). ACAP has initiated the following programmes to counteract the above problem.

- Food preparation and lodge management training
- Village-based lodge management committees
- Standardised menus and pricing

Lodge owner and operator training is provided on;

- identification of tourist needs,
- promotion of hospitality to keep tourists happy,
- maintaining kitchen hygiene and sanitation,
- teaching how long to boil water and cook food for safety's sake,
- teaching how to sell and buy goods and services, and
- keeping audits for their business.

While almost all lodge managers in the phase I area have received at least one training session, their interest in acquiring further training, especially in the English language to improve communication with foreigners, is increasing. Continuation of periodic refresher training courses and more advanced training on the above issues need to be gradually completed by a training in English.

ACAP has assisted in the establishment of lodge management committees (LMCs) in heavily visited tourist areas, such as Ghandruk, Chhomrong and Ghorepani, with the objective of encouraging improved tourism management LMCs set policy regarding tourism issues in each village relating to the establishment of minimum lodge standards in sanitation, toilet facilities, and room security. While it is reported that there is an improvement in the comfort and cleanliness of tourist facilities, especially in the phase I area, not all lodges in Siklis outside the phase I area are found to have met minimum standards. The establishment of LMCs has also been successful in limiting the number of lodges in Ghorepani and the Annapurna sanctuary where the increasing number of lodges being constructed was leading to forest degradation and reduced profits. Studies indicate that, although no new lodges are being built in Ghorepani, ACAP has not been successful in limiting the size of each lodge, since existing lodges continue to add storeys. As a result, deforestation in some areas continues.

Through LMCs, ACAP has been able to persuade lodge owners to eliminate price competition through standardised lodge pricing and improved menus.

ACAP has helped to create menus that are based on locally available resources, thereby reducing the leakage. Available information indicates that as much as 50 per cent of the money spent by tourists is currently retained in the village in contrast to seven per cent before ACAP. An increase in the entry fee and a decline in purchases from Pokhara both minimise the leakage. The extent to which the reduced leakage has resulted from each of these factors is, however, not known.

Trekker Education--An ACAP intervention strategy on the demand side involves education programmes for trekkers, who are the users of the environment. ACAP has therefore provided both cultural and environmental information to trekkers through the following avenues.

- Information brochures and minimum impact code
- Natural history museum in Pokhara
- Visitor centre in Ghandruk and information posts in Chhomrong and Ghorepani
- ACAP area map.

Brochure--The brochure provides useful information on the Annapurna area and the ACAP programme approach and activities. It also provides a basic map outline of the ACAP area and ACAP's minimum impact codes. The codes make recommendations to trekkers under three general headings: conserve fuel-wood, stop pollution, and be a guest. Such codes are also printed on standardised menus in lodges. ACAP provides this brochure to every trekker when they pay the conservation fee.

Museum--Information on the area's culture, environment, natural resources, and ACAP activities is housed at the Natural History Museum on Prithvi Narayan Campus of Tribhuvan University, located some distance away from the tourist lakeside hub. Closer proximity to the tourist centre would perhaps increase visitation of this museum.

Visitor Information Centre--The visitor centre located in Ghandruk provides statistical information on the number and location of ACAP activities. Smaller information posts situated at Chhomrong and Ghorepani provide information on the local area and ACAP activities. Several studies conducted by outsiders (foreigners) have noted that information presented is unnecessarily overstated or sensationalised. That significant numbers of displays place blame for environmental degradation on tourists without equally attributing this to other factors is noted as a negative point. In this context, information displayed at

Sagarmatha National Park is effective in educating the visitors on a wide range of factors.

Product Diversification: Eco-tourism. His Majesty's Government of Nepal has entrusted ACAP with developing a model eco-trekking route under the title of "Eco-tourism Development and Circuit Trekking Project in Ghalekharka Siklis region". The project is funded by the Asian Development Bank, Manila. The main objective of this project is to promote or manage tourism so as to reduce to a minimum its environmental and socio-cultural impact, cater to visitors with different tastes, etc. Currently, about one thousand visitors use this trekking route. Some of the conservation and development programmes being implemented are given below.

Kerosene Depot Management--Kerosene depots have been established at Ghalekharka and Khaibrang villages under the supervision of local kerosene depot management committees. Limited visitor inflow as well as decreased local demand due to electrification has made it unfeasible to establish two depots as planned in Siklis and Panche.

Community Lodge-- Discussion on the construction of community lodges at the proposed sites in Siklis/Panche and Ghalekharka/Khaibrang villages remains in progress.

Electrification--Feasibility studies for the proposed micro-hydro electricity power sites at Khilang and Tanling have been completed. Various other community development projects are being launched or proposed for this eco-trekking route and include the following.

- Construction of a national history museum in Siklis and the establishment of a tourist information centre in Ghalekharka.
- Repair and maintenance of 10 schools.
- Repair and maintenance of various trails considered to be critical or dangerous.
- 10 drinking water projects, expected to be completed by the end of 1996, of which seven will directly benefit camp sites and three will benefit three villages.
- Promotion of vegetable gardens in Ghalekharka and Khaibrang.
- Promotion of poultry farming.
- Establishment of a forest nursery with a 10-15 thousand seedling production capacity.
- Plantation of 4,370 seedlings on four hectare of public land.

- Regular clean-up campaigns to be carried out in villages and on campsites with the help of local youth clubs, mothers' groups, and school students.

Summing Up

ACAP has been able to demonstrate an innovative approach to conservation and development with people's participation. ACAP has demonstrated its success in strengthening grass-roots' organisations by providing them with the responsibility of making forest conservation rules and community development decisions. The formation of management committees has made it possible to increase community participation in conservation and development activities. Conservation education, lodge owner training, literacy programmes, and women's development have enhanced environmental awareness among villagers. Conservation education has played an effective role in creating a shared sense of responsibility for maintaining the forest. Available reports further indicate significant declines in the use of fuelwood and hence reduced dependence on the forest as a result of fuel-efficient stoves, back boilers, kerosene, and electricity, especially among lodge owners in some areas. Evidence also reveals the effectiveness of ACAP towards changing the behaviour of local people regarding forest use. There has been a gradual decline in non-sustainable forest use practices. In addition to these major successes of ACAP conservation initiatives, there has also been improved sanitation and tourist facilities. Drinking water supplies and access to toilets have now improved. Similarly, available evidence indicates improvement in safety, hygiene and comfort in tourist lodges and standardisation of lodge prices. Finally, ACAP has, to some extent, also been able to minimise the leakage of tourist expenditure outside the region by establishing linkages of tourism with other production activities in the local economy. Despite these successes, several issues that need to be immediately addressed by ACAP to further strengthen its programmes are highlighted below.

Lack of Baseline Data and Documentation

ACAP's information base appears to be very weak. Despite various activities being undertaken over a wide areas, information on the projects, beneficiaries, and cost of the programmes is not easily available. The lack of adequate and systematic baseline data on the socioeconomic and natural resource conditions of the project area has been one of the most critical impediments in reviewing ACAP's programmes in the area. For an evaluation of the effectiveness of all project components, this information deficiency will be a major drawback.

There has been little attention paid to strengthening the database. Quantitative information on the major accomplishments of ACAP programme activities in the project area is not well recorded in progress reports. Of particular importance is the lack of annual revenue and expenditure figures for ACAP.

Monitoring and Evaluation Mechanisms

ACAP has not been able to develop an ongoing monitoring and evaluation mechanism for its programmes. This has greatly impaired the ability of both ACAP staff and community members to understand the impact of project activities in the area. Progress reports, which are produced mostly on the basis of the qualitative judgement of staff members, generally list initiatives undertaken without providing significant feedback and effects of these initiatives. An ongoing evaluation and documentation of successes and failures from which others can also learn becomes extremely important for a project like ACAP, given its experimental model of conservation and development.

Conservation Incentives

ACAP provides indirect incentives for conservation in its support to the community development projects, and while the community development project partially supported by ACAP encourages the community as a whole to follow ACAP's conservation rules, it does not provide direct incentives for individuals. This implies that villagers are likely to return to non-sustainable forest practices whenever there is decline in ACAP's development support to the villages. Conservation education should be backed by more direct incentives to counter this problem in future. Furthermore, incentive mechanisms should also reach those living outside the village boundary, as at present they have less incentive to comply with forest rules.

Ghandruk as a Unique Village

Ghandruk has the following important attributes, not found in every ACAP project village, which may have contributed to the success of ACAP initiatives.

- Respected village leader
- Well-organised village structure
- Relatively homogeneous population
- Considerable wealth relative to neighbouring villages due to outside income from army pensions.

Other villages in the area are not likely to compete with Ghandruk in these attributes, and the success of the ACAP programme in other deprived villages and the more deprived communities has yet to be seen. A large part of the ACAP region is inhabitated by such deprived people. Although the programmes carried out by ACAP should be seen as a positive step, lessons learned so far must be used to carry out programmes in other areas on a wider scale. In this respect, if tourism is to be a driving force in the conservation and development of the ACAP area, there has to be a greater focus on product diversification and income-generating activities. The link between tourism and community development must be based on improving community productivity and the production base. The conservation and community development programmes that are being carried out will not alone generate income, and, for them to be successful, a greater focus on wide-scale income generating programmes is necessary.

Table 3.1: Total Population in Annapurna Region

Population	Household No.	Total number of		
Male: 51,420 (48.77%)	22,225	VDCs	Districts	Zones
Female: 54,004 (51.23%)		58	5	2

Source: Population of Nepal, CBS, 1994

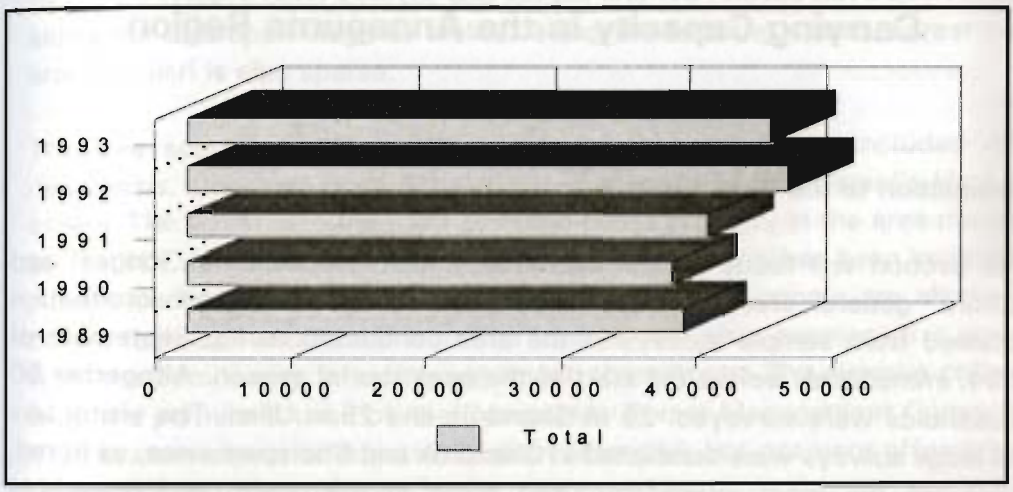
Table 3.2: Visitor in the Annapurna Area

Months	1989	1990	1991	1992	1993	1994
Jan	1,525	2,374	1,879	1,639	2,355	1,979
Feb	2,578	2,845	2,590	1,201	3,428	3,313
Mar	5,085	5,348	5,389	8,199	6,357	6,873
Apr	2,430	3,853	4,441	5,072	5,583	5,371
May	4,217	1,120	1,325	1,553	1,444	1,792
Jun	148	337	317	515	507	527
Jul	416	315	443	617	476	297*
Aug	396	445	721	975	688	
Sep	1,711	2,107	2,909	3,508	2,609	
Oct	4,633	7,768	7,586	9,989	9,607	
Nov	9,129	5,711	5,186	7,089	6,360	
Dec	4,326	3,588	5,727	4,096	3,717	
Total	36,594	35,811	38,513	44,453	43,131	20,152

Source: KMTNC, ACAP's Entry Fee Collection Counter, Department of Immigration, Thamel Kathmandu.

* Based on entry fee collected up to 22 July, 1994.

Chart 1: Visitors to the Annapurna Area (1989-1993)



Source: Table 3.2.